

# COPENHAGEN'S GREEN ACCOUNTS

## 2009







## GREEN GROWTH IN THE ECO-METROPOLIS OF THE WORLD

Copenhagen is growing. We want to make the City's growth green.

Cities are playing an increasingly important role in solving the global challenges we are facing. Ambitious cities such as Copenhagen must lead the way. We want to reduce the City's CO<sub>2</sub> emissions by 20 % before 2015, and Copenhagen is to be CO<sub>2</sub> neutral before 2025. The Copenhagen City Council unanimously agreed on the City's ambitious climate plan in August 2009, and 34 initiatives have already been launched.

With Copenhagen's Green Accounts, we will follow the City's results year by year, both with regard to our CO<sub>2</sub> goals and the other goals the City has set for the environment.

There is great international interest in our urban environment. The City's many cyclists, sea swimming pools and the use of organic food in the City's kitchens are just a few examples of the impressive results documented in Copenhagen's Green Accounts 2009. However we still face great challenges. Car traffic is already a significant problem today, and it will only get worse if we fail to act. We need new initiatives that will help mobility in the City move toward green solutions.

We have a vision that Copenhagen is to be the Eco-metropolis of the world in 2015, that is the capital city with the best environment in the world. It is encouraging that more than 90 % of Copenhageners think that it is important that the City has an ambitious vision and ambitious goals with regard to the environment. This vision requires new efforts. In future, partnerships with enterprises and knowledge institutions will contribute to creating innovative and green solutions to the City's challenges.

Together we will demonstrate that there is action behind our words.

**Lord Mayor**

  
Frank Jensen

**Mayor for the Technical and Environmental Area**

  
Bo Asmus Kjeldgaard



# THE WORLD'S BEST CITY FOR CYCLES



## 55,000 MORE CYCLISTS

Every day 150,000 people cycle to work or their place of education in Copenhagen. This is just over a third of all commuters in the city. In comparison with other big cities, this figure is quite significant, however if we are to achieve the goal of 50 %, an additional 55,000 people have to start cycling to work.

Source: Copenhagen Municipality, 2009  
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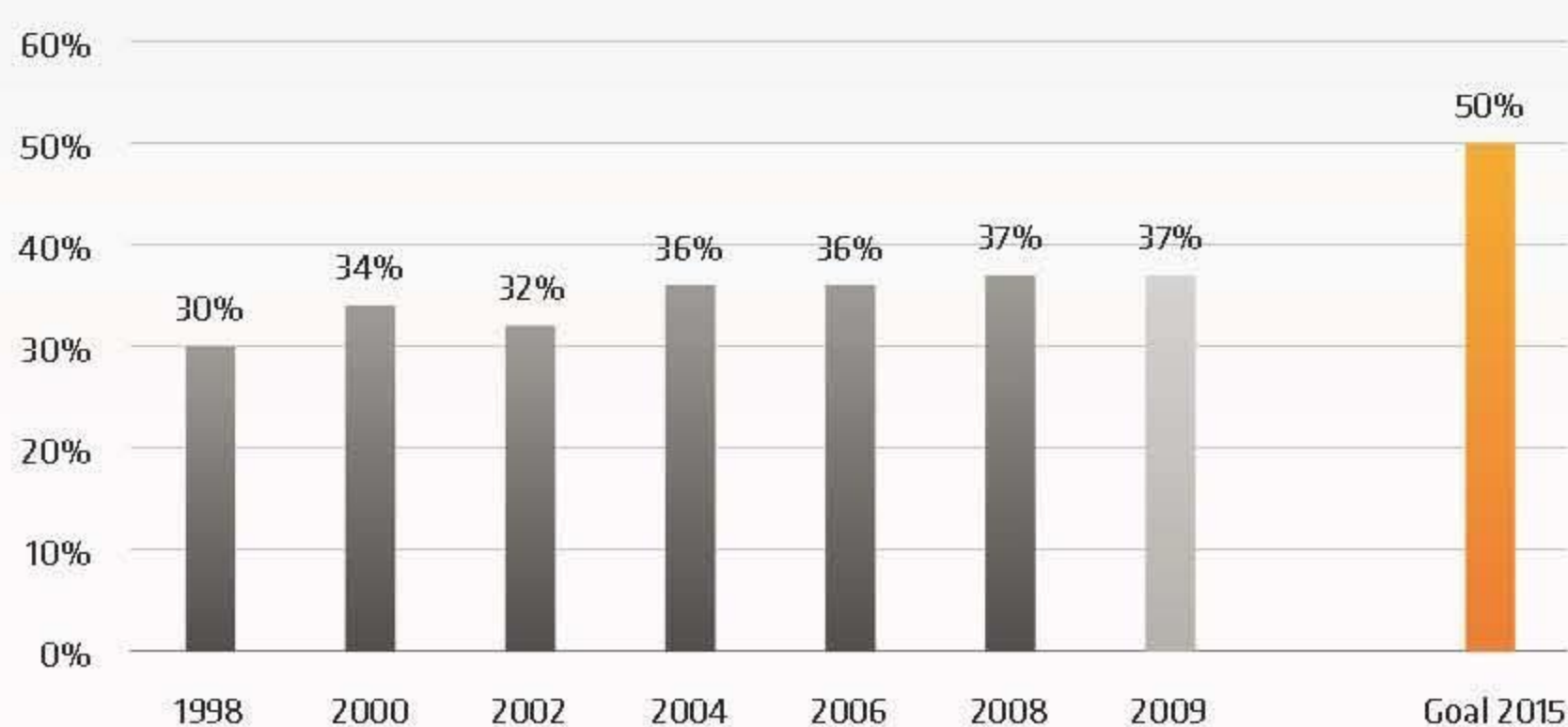
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Source: Copenhagen Municipality, 2009  
Copenhagen Municipality, 2009

PERCENTAGE OF PEOPLE CYCLING TO WORK OR EDUCATIONAL INSTITUTION IN COPENHAGEN



## GOALS FOR CYCLING IN 2015



- At least 50 % of people will go to their workplace or educational institution in Copenhagen by bike
- The number of seriously injured cyclists in Copenhagen to be halved compared to 2005
- At least 80 % of cyclists in Copenhagen to feel safe and secure in traffic



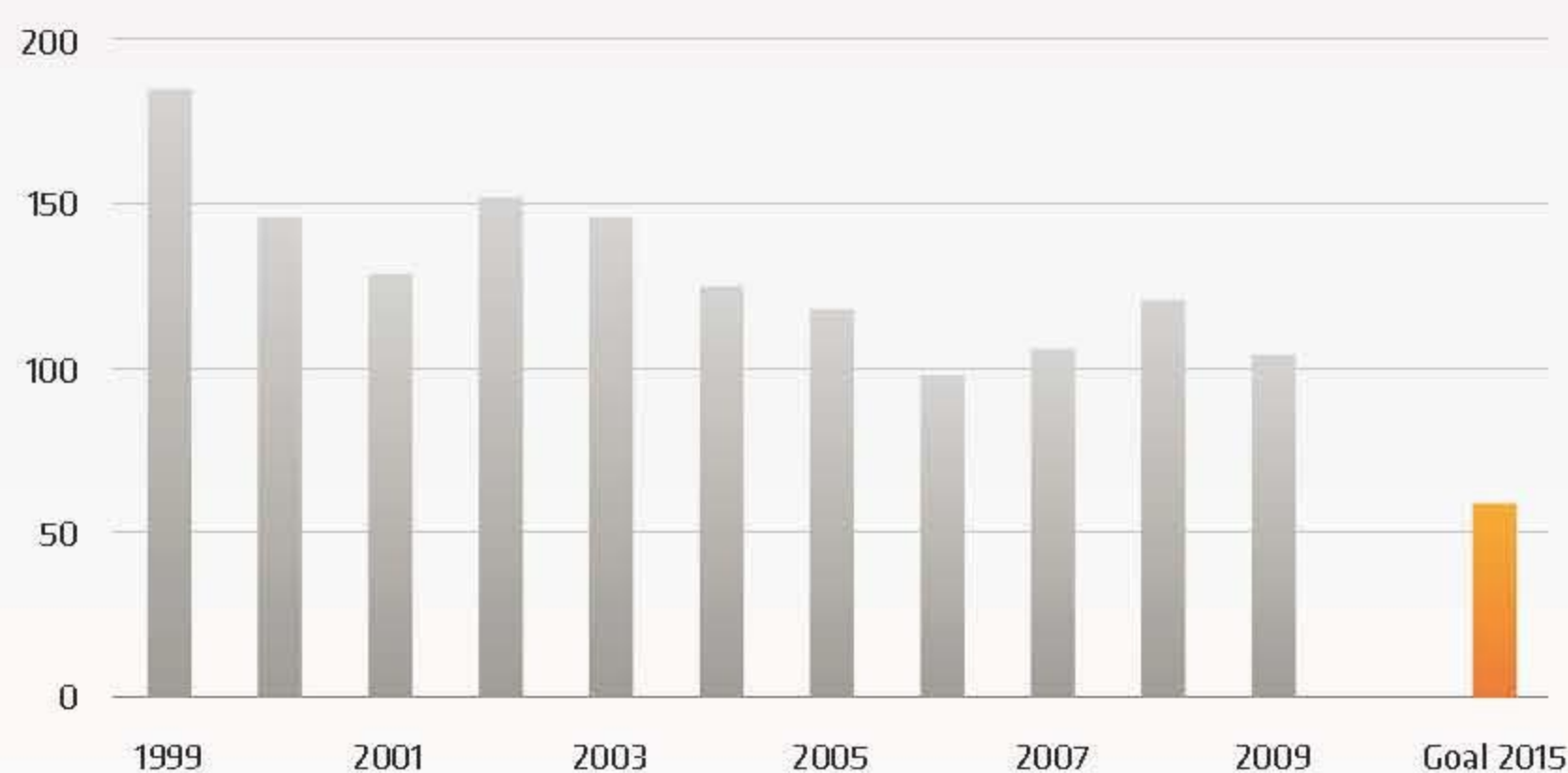


## FEWER INJURIES

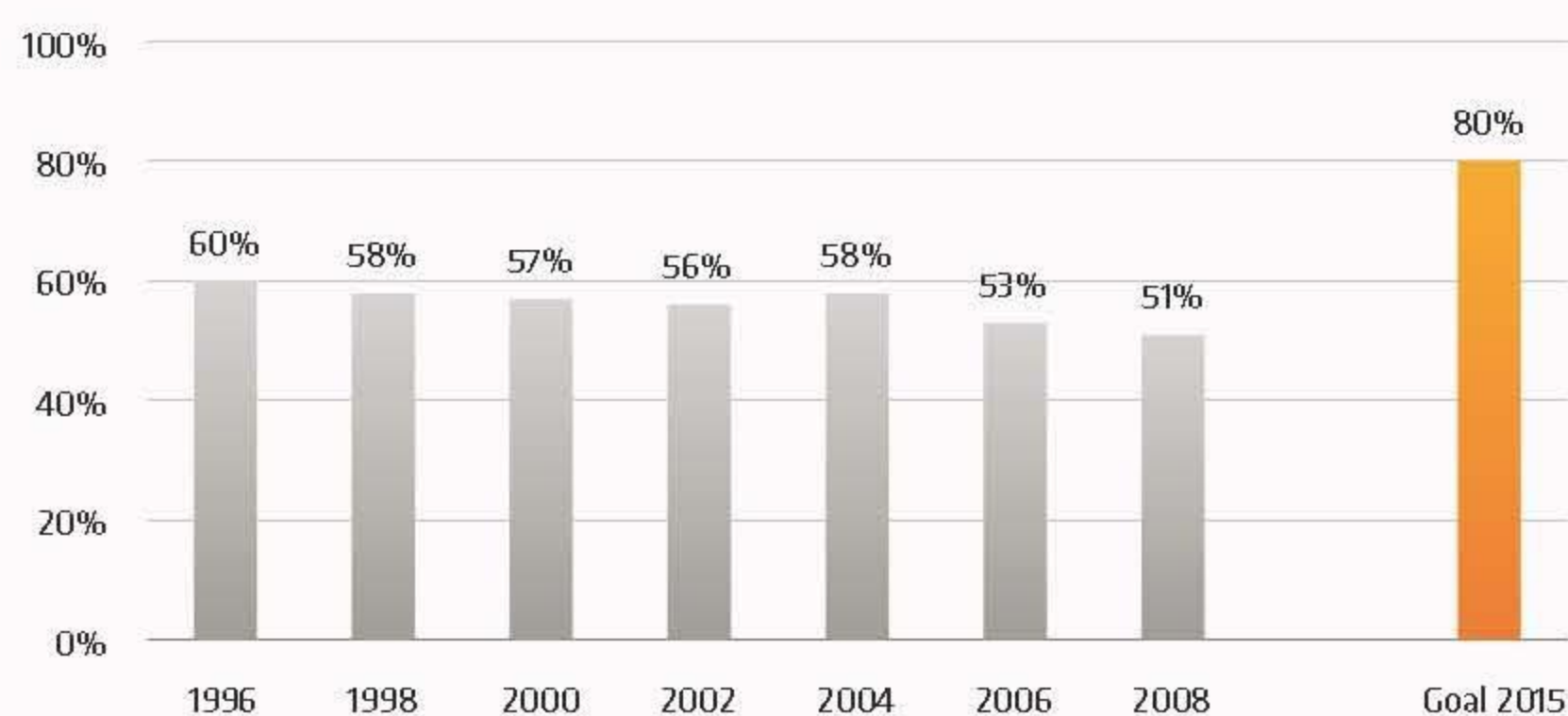
The number of cyclists killed or seriously injured in traffic fell significantly in 2009 compared to 2008. In 2009, 102 cyclists were seriously injured and 2 were killed, compared to a total of 121 serious or fatal injuries in 2008. Also seen in the long term, the trend is still positive. Where there is one fatal or serious accident per 3.8 million km cycled today, in 1996 there was one accident per 1.2 million km cycled. As a cyclist, the risk of being involved in a serious accident has thus been reduced by 67 % in the last 13 years.

Safety on the roads in terms of 'feeling safe' has however seen a slight fall in the same period. One of the reasons for this is that there are more cyclists on the roads. The less space for each cyclist, the less safe it will feel to be on the roads – regardless of whether the statistical risk of being involved in an accident has been reduced. Cyclists' safety and security in traffic bears great significance on how many people choose to cycle.

NUMBER OF CYCLISTS SERIOUSLY INJURED ON THE ROADS - INCLUDING FATALITIES



PERCENTAGE OF CYCLISTS FEELING SAFE IN TRAFFIC



READ MORE AT ...



[www.kk.dk/cityofcyclists](http://www.kk.dk/cityofcyclists)



# CLIMATE CAPITAL

## GROWTH LEADS TO NEW CHALLENGES

In 2009 CO<sub>2</sub> emissions from Copenhagen were at the same level as in 2005. The goal is for the city's total CO<sub>2</sub> emissions to be reduced by 20 % in 2015 compared to 2005. This means that we really need to speed up implementation of the many initiatives of the climate plan if we are to achieve this.

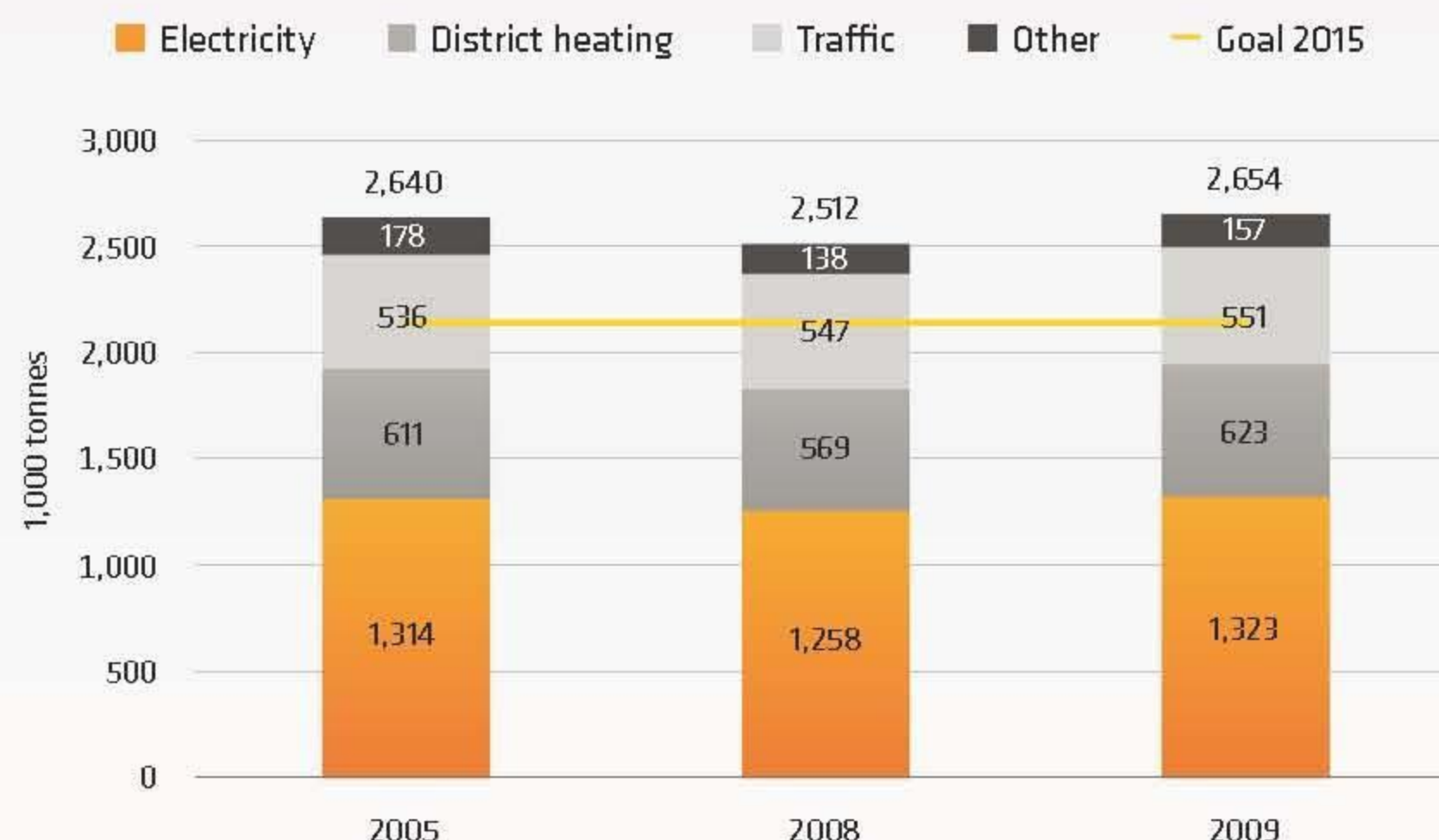
Copenhagen is growing. The number of work-places, dwellings and institutions is increasing, and the population has increased by 5 % since 2005. The city's consumption of electricity and heating has seen a smaller increase in the same period, that is 'merely' just over 2 %. Overall we are moving in the right direction with regard to the individual's energy consumption.

Both energy consumption and especially CO<sub>2</sub> emissions depend on many factors that vary from year to year. This means that simply comparing data from two different years does not yield a clear picture of the overall trend. For example, weather conditions and the country in which electricity is produced may greatly affect the rise or fall in CO<sub>2</sub> emissions each year. When calculating CO<sub>2</sub> emissions today, the City uses the 'Municipal CO<sub>2</sub> Calculator' ('Den kommunale CO<sub>2</sub>-beregner') that was developed in 2008. This means that in a few years we will have a more extensive series of comparable data for the area, which will make it possible to draw a clearer picture of the overall trend, despite annual fluctuations.

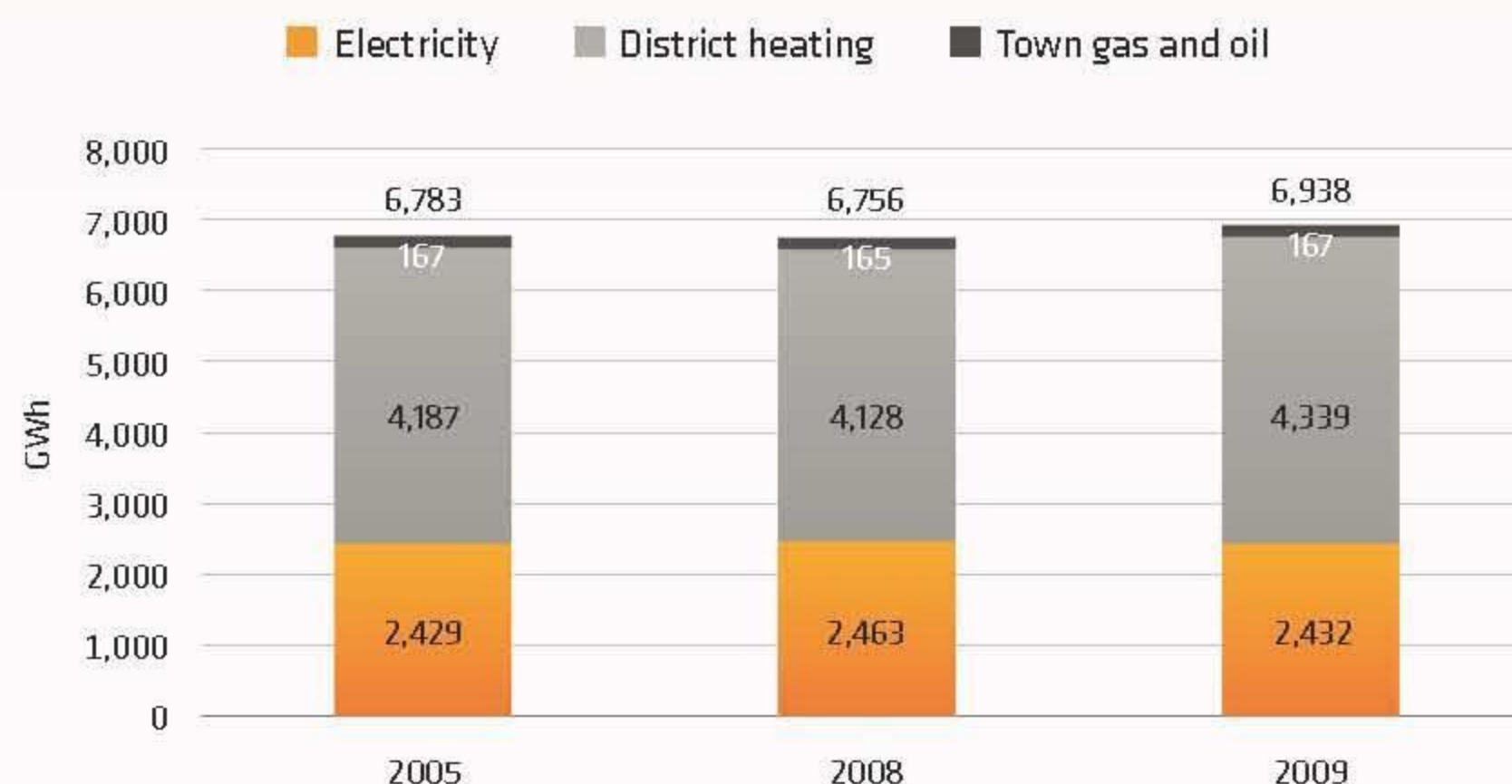
The trend shows a slight drop in electricity consumption from 2008 to 2009. In contrast, district heating consumption increased by 5 % because 2009 was colder than 2008.

In total, in 2009 CO<sub>2</sub> emissions were 5 % higher than in 2008. This increase can especially be attributed to two factors, namely the purchase in 2009 of German electricity that has high CO<sub>2</sub>

## CO<sub>2</sub> EMISSIONS BY SECTOR



## ENERGY CONSUMPTION BY SECTOR - EXCLUDING TRANSPORTATION



emissions per MWh, and that the increase in CO<sub>2</sub> emissions from district heating was almost twice that of the increase in district heating consumption. This is among other things due to the combined heat and power plant Amagerværket

having put a new block into operation in 2009 which has run on coal in its start-up period.

## GOALS FOR CO<sub>2</sub>



- A reduction of Copenhagen's CO<sub>2</sub> emissions in 2015 of at least 20 % compared to 2005
- Copenhagen is to be CO<sub>2</sub> neutral in 2025.

## READ MORE AT ...



[www.kk.dk/climate](http://www.kk.dk/climate)

[www.kk.dk/miljoregnskab](http://www.kk.dk/miljoregnskab)

More about energy consumption and CO<sub>2</sub> emissions (in Danish)

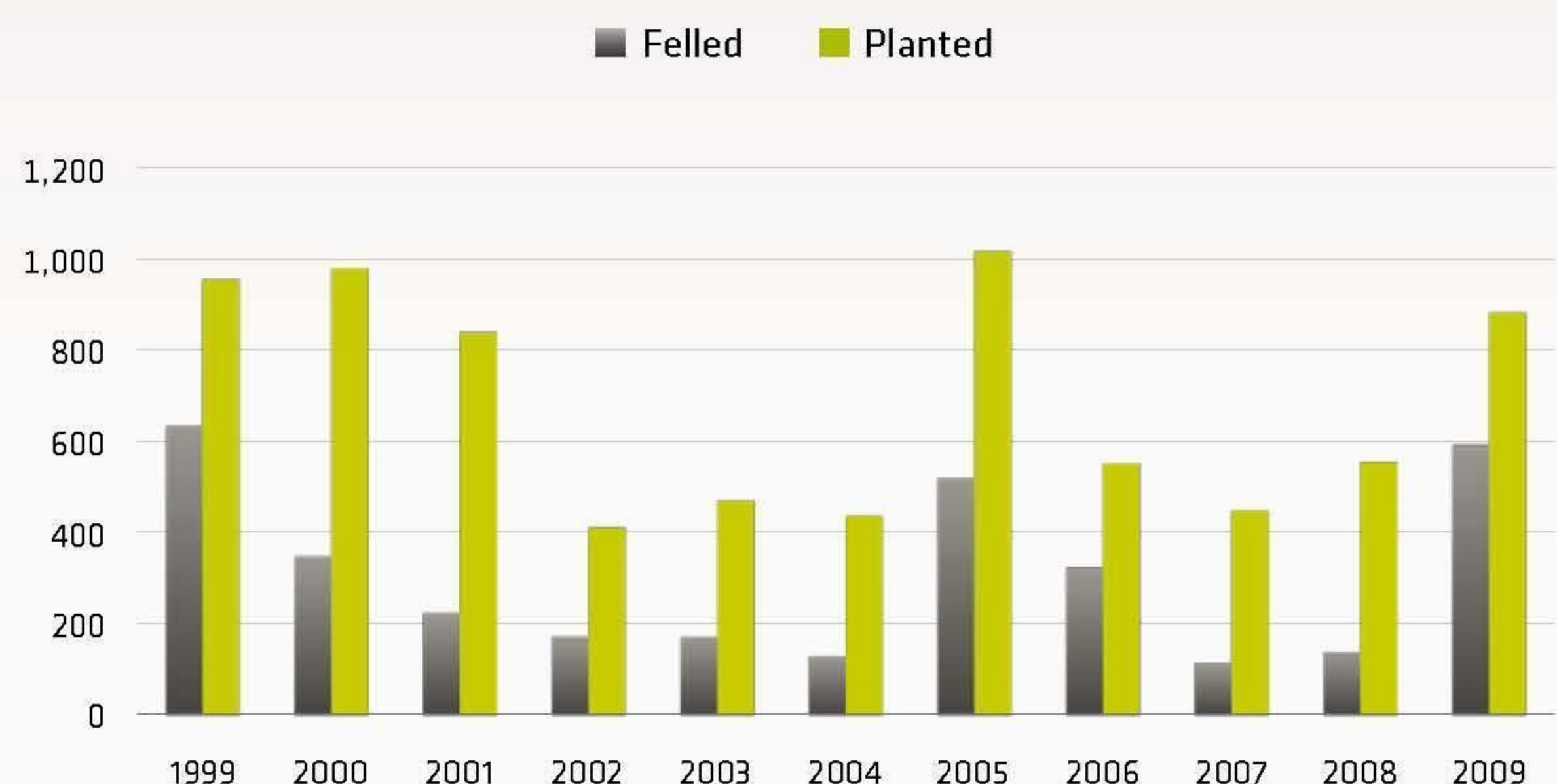


# A GREEN AND BLUE CAPITAL CITY

## MORE GREEN AREAS IN THE CITY

It is pleasant to live in a diverse city with space for outdoor physical activity, excursions or just to meet. At the same time, outdoor recreational activities are crucial for people's health and well-being. The distribution of parks and natural areas is relatively good in Copenhagen, even though some areas of the city are more densely built up than other areas. A preliminary survey from 2007 shows that approximately 60 % of Copenhageners are able to walk to a larger green or blue recreational area in less than 15 minutes. The City is working on drawing a more precise picture of the walking distance to the city's green and blue areas.

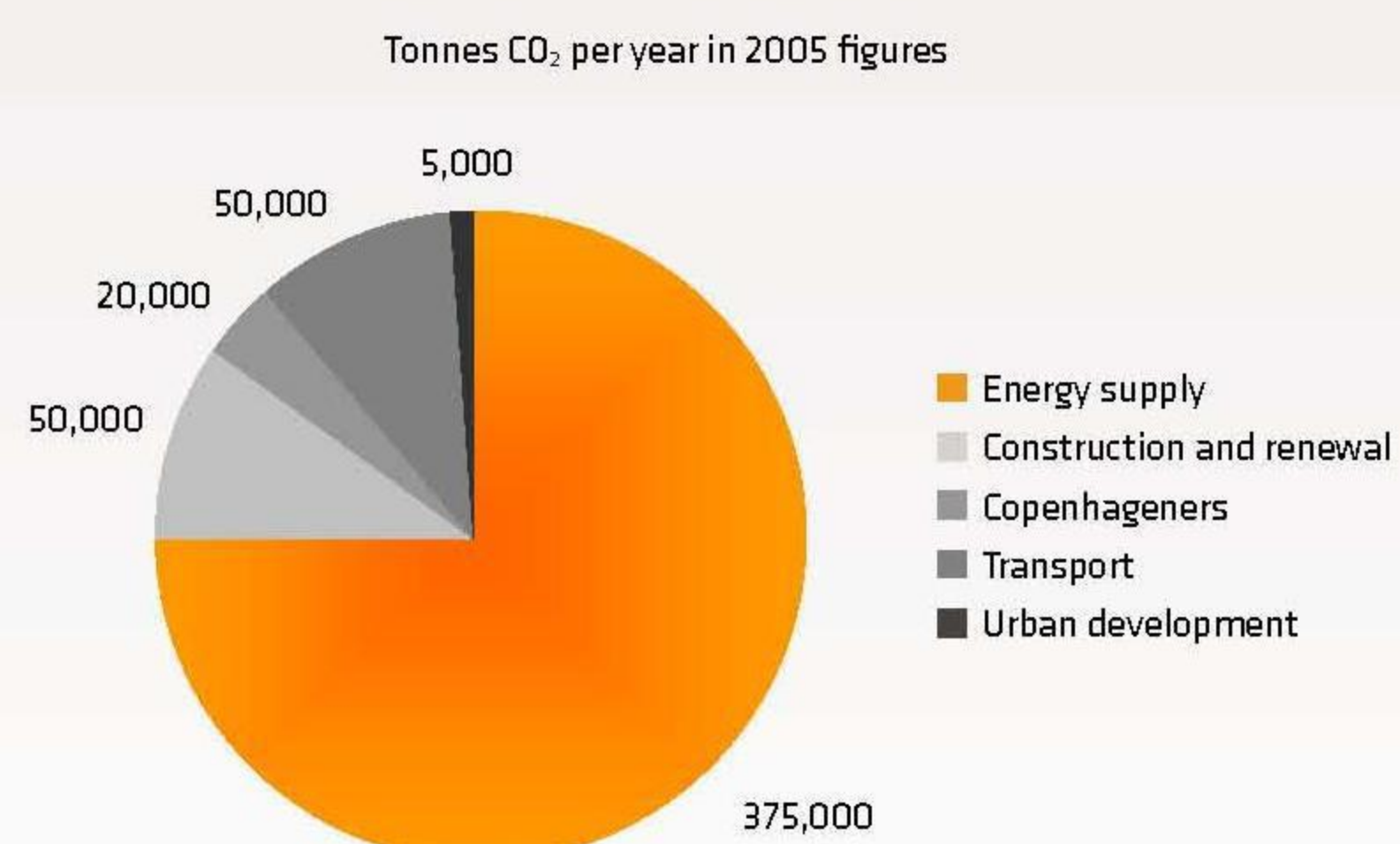
NUMBER OF TREES FELLED AND PLANTED IN PARKS AND ON PUBLIC ROADS



## IMPLEMENTING THE CLIMATE PLAN

2009 was the year that truly put Copenhagen on the world map as it hosted the UN climate summit COP15. For a while, Copenhagen was indeed the climate capital of the world and also hosted a climate summit for mayors from the world's largest cities.

CLIMATE PLAN SUB TARGETS FOR CO<sub>2</sub>-REDUCTION



## GOALS FOR GREEN AND BLUE AREAS IN 2015



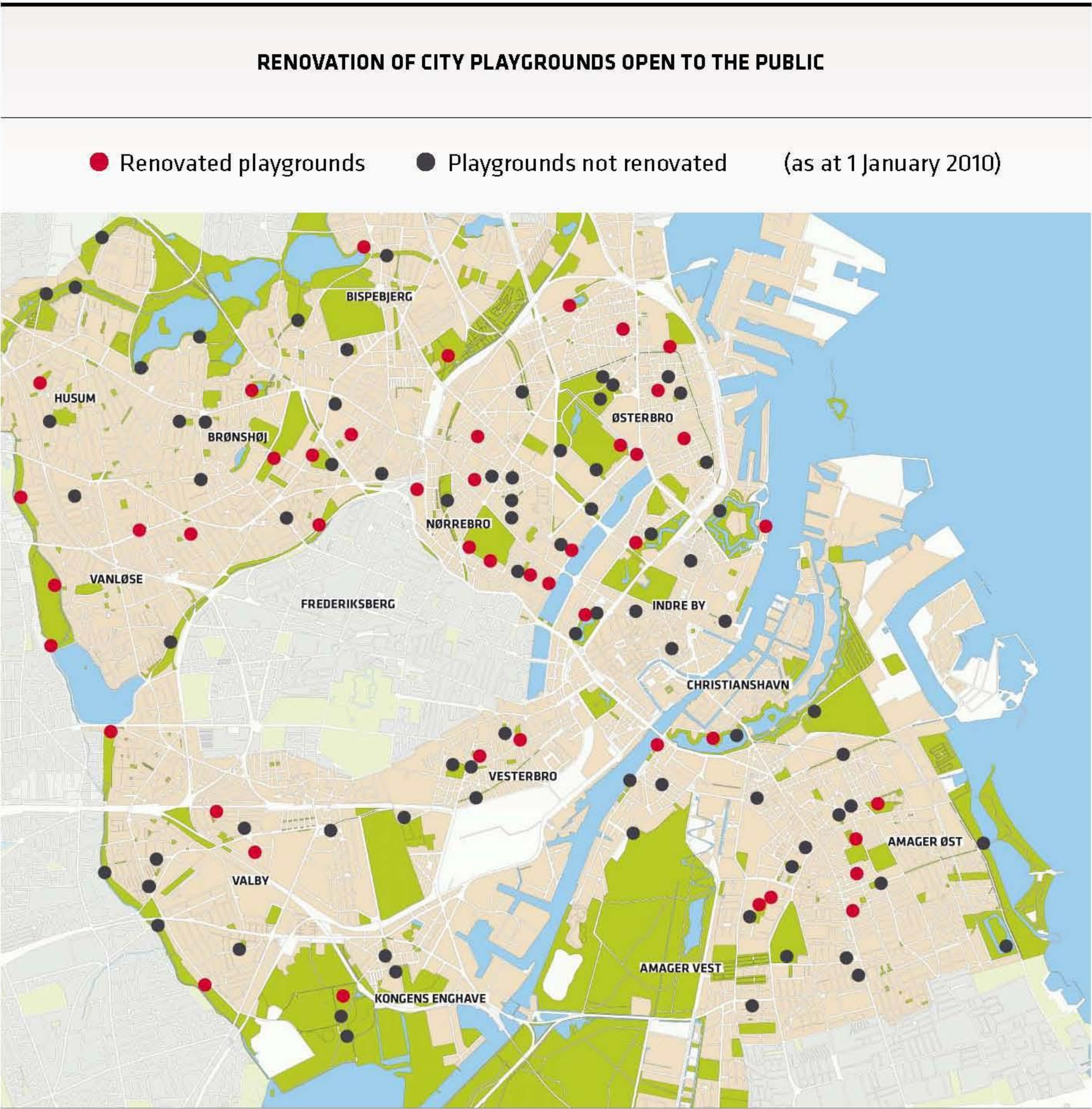
- 90 % of Copenhageners should be able to walk to a park, a beach, a natural area or sea swimming pool in less than 15 minutes
- Copenhageners will be visiting the city's parks, natural areas, sea swimming pools and beaches twice as often as today (on average 1 hour every other day)





## BETTER PARKS AND PLAYGROUNDS FOR THE PUBLIC

In 2008 Copenhageners visited the city's green and blue areas on average every other day, and stayed for more than an hour. The City of Copenhagen wishes to motivate more Copenhageners to visit the city's parks. This is why in 2009 focus was on creating a greater feeling of ownership and interest in the city's parks



READ MORE AT ...



[www.kk.dk/miljoregnskab](http://www.kk.dk/miljoregnskab)

Maps and data on green and blue areas in the city (in Danish)



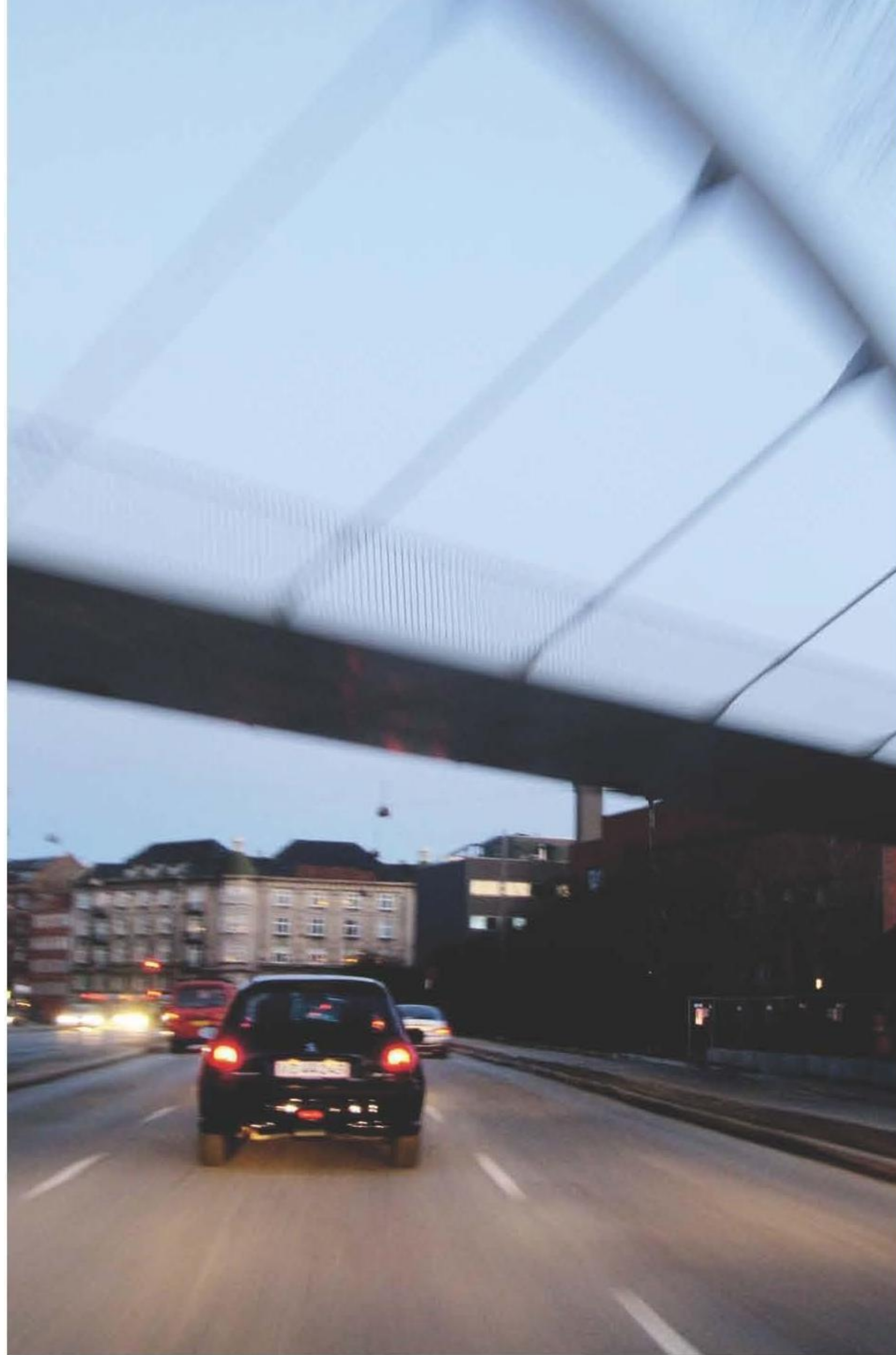
# A CLEAN AND HEALTHY BIG CITY

## TOO MUCH NOISE DISRUPTS SLEEP AND LEARNING

Road traffic is by far the biggest noise problem in Copenhagen. Noise affects people's health. Especially if they do not get a proper night's sleep. And noise affects how children learn language and their learning abilities in general.

## REDUCING TRAFFIC NOISE

The City of Copenhagen is working to reduce noise from traffic.



### SCHOOLS AND INSTITUTIONS IN AREAS WHERE NOISE LEVELS FROM TRAFFIC EXCEED 58 DB (CALCULATED AS WEIGHTED DAILY MEAN)

	< 58 dB	58-63 dB	63-68 dB	68-73 dB	≥ 73 dB
Institutions	426	113	80	44	12
Schools	39	27	25	19	8

The Danish Environmental Protection Agency recommends a limit value of 58 dB for noise nuisance at schools and institutions, etc. A level of 58 dB is considered a 'low noise level'.

### GOALS FOR NOISE IN 2015



- Copenhageners should be able to sleep peacefully, free from noise harmful to health from street traffic
- All schools and institutions should be subject to only low traffic-noise levels during the day



## CONTINUED IMPROVEMENTS IN AIR QUALITY

Today air pollution in Copenhagen is primarily due to traffic in the city. Up to 90 % of air pollution on roads with the most heavy traffic, e.g. H.C. Andersens Boulevard, is assessed to stem from traffic.

In general the air quality in the city has improved significantly over the past years. Today the content of substances such as lead, carbon monoxide (CO) and sulphur dioxide is far below the current limit values. However traffic-related pollution due to particles, especially ultrafine particles (PM0.1), and pollution due to nitrogen dioxide (NO<sub>2</sub>) continue to constitute a challenge.

Nitrogen dioxide pollution can lead to reduced lung function and reduced lung resistance to infection. Particle pollution can exacerbate or cause chronic lung disease and cardiovascular disease. Furthermore pollution can be a contributing factor to cancer and lead to asthma and premature death. Especially children, the elderly and people with respiratory problems are affected by air pollution.

With regard to particles, measurements of the content of particles smaller than 10 µm in diameter (referred to as PM10) have shown a favourable development over the past years. The limit set for the annual mean value has not been exceeded since 2007.

The most recent preliminary results for 2009 show that the daily mean values that are measured regularly throughout the year did not exceed the set 50 µg/m<sup>3</sup> more than the accepted 35 times. That is, in 2009 the limit value was exceeded 19 times, whereas it was exceeded 60 times in 2007 and 59 times in 2008.

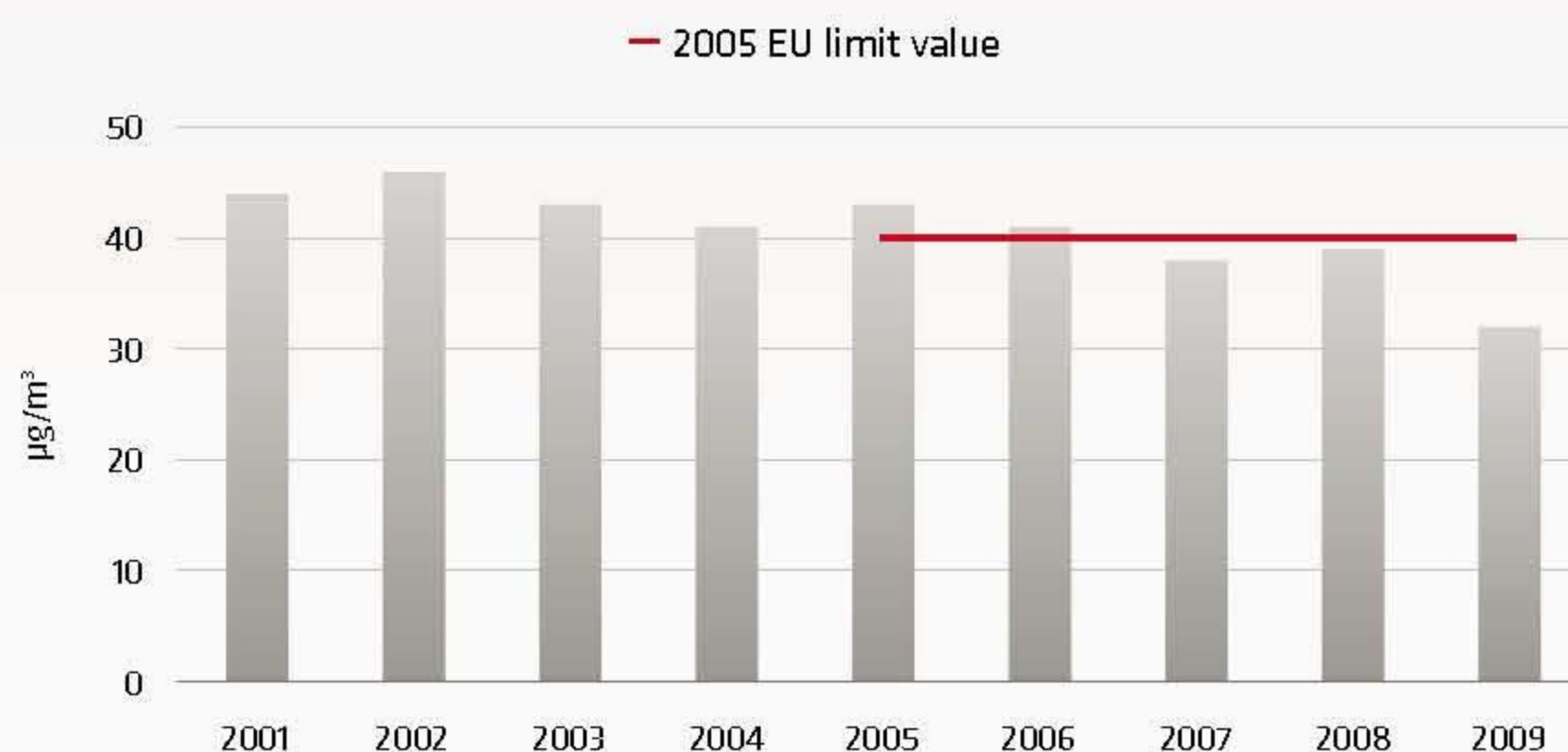
The calculated annual mean value for 2009 is also surprisingly significantly lower than the

values for the previous years. Further analysis of the composition of particles indicates that one of the most important factors for this fall in the air particle content is the new noise-reducing asphalt on H.C. Andersens Boulevard that was laid down in autumn 2008. Apparently the noise-reducing asphalt leads to less road dust than normal. Measurements from the next years will show to which extent the positive effect is lasting, even as the asphalt ages. The City regularly lays noise-reducing asphalt

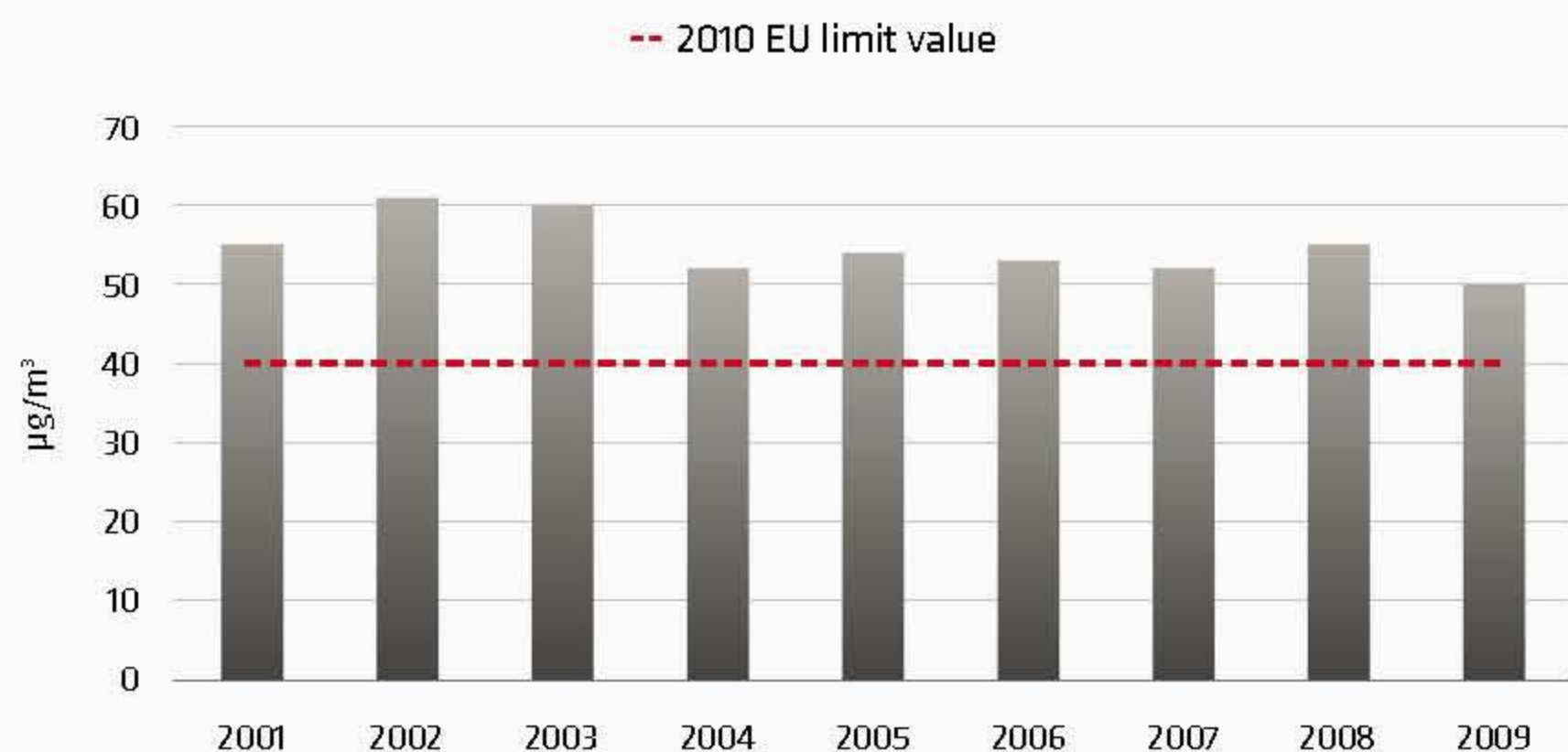
when maintaining stretches of road with heavy traffic.

In contrast, the nitrogen dioxide content in the air continues to exceed the limit value that Denmark is to meet from 2010 in accordance with current EU regulations. This is indicated by the preliminary results for 2009. The Danish Environmental Protection Agency expects to find that the limit value has been exceeded on 35 stretches of road in Copenhagen in 2010.

**AIR CONTENT OF PARTICLES (PM10)**  
**ANNUAL AVERAGE VALUE H.C. ANDERSENS BOULEVARD (0 °C, 1 ATM)**



**AIR CONTENT OF NITROGEN DIOXIDE (NO<sub>2</sub>)**  
**ANNUAL AVERAGE VALUE H.C. ANDERSENS BOULEVARD**



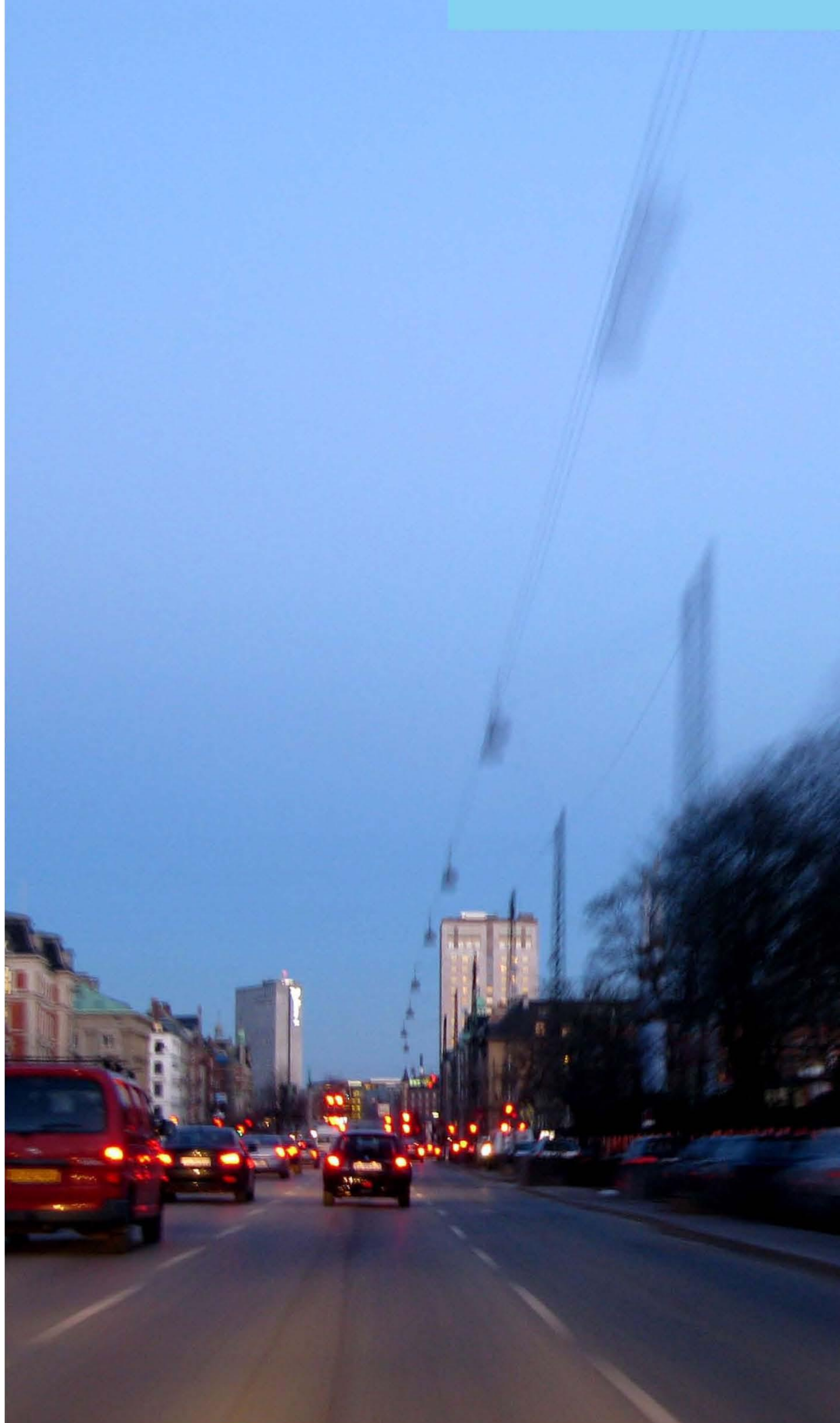


## EFFORTS FOR CLEANER AIR

The joint Environment Zone for Copenhagen and Frederiksberg from 2008 was expanded on 1 November 2009 to include the entire City of Copenhagen. Heavy vehicles of a certain age may only enter the environment zone if they are equipped with a particle filter. This filter cleanses exhaust fumes, reducing in particular the amount of ultrafine particles which are thought to constitute the greatest health problem as regards air pollution in the city.

There are no limit values for the air's content of ultrafine particles. Requirements for the environment zone were tightened in July 2010 so that all vehicles that were more than 4 years old at that time must be equipped with a particle filter. Before July 2010 only vehicles that were more than 7 years old on 1 September 2008 were required to have a filter.

The Danish Environmental Protection Agency is expected to prepare a plan for air quality in Copenhagen and Frederiksberg in cooperation with the City of Copenhagen and the City of Frederiksberg in the course of 2010. This plan is necessary if the EU is to postpone its deadline for meeting the limit value for nitrogen dioxide.



### GOAL FOR AIR IN 2015



- The air should be so clean that Copenhageners' health will not be damaged





## MORE ORGANIC FOOD IN COPENHAGEN

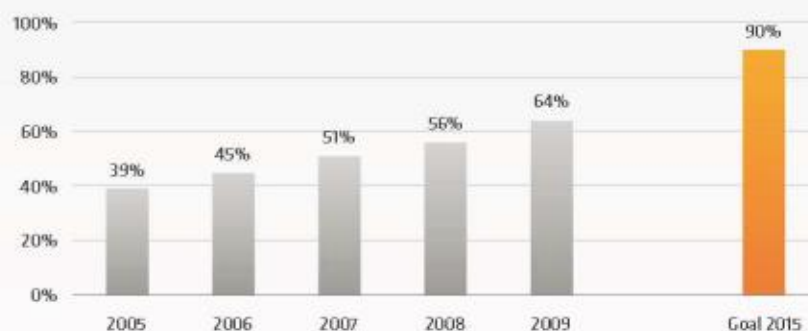
The efforts to switch to organic food in the City's kitchens are still paying off and once again the figures for organic food have increased in the City of Copenhagen. Now 64 % of the food served in the City's institutions and canteens is organic. The City has thus reached the sub goals of the Agenda 21 Plan that at least 60 % of the food in the City's kitchens should be organic by the end of 2009.

All types of kitchen have moved in the right direction, particularly the new school dinner programme, EAT, is responsible for a significant part of this progress as the percentage of organic food served at schools has risen by 18 percentage points. The figures for organic food are also a result of the increased amount of food prepared in kitchens in the City's children's institutions, after packed lunches were abandoned in January 2010. Today the food served in children's institutions is to a great extent organic.

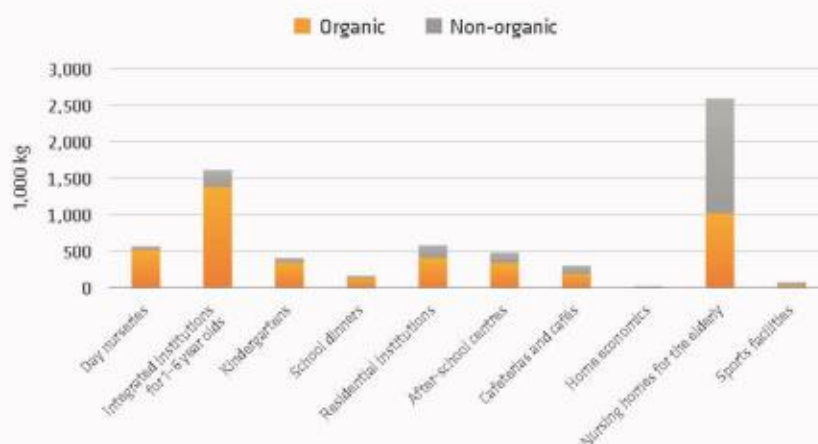
Efforts in the City's two largest kitchens that supply many of the City's nursing homes with meals will be a great challenge if the City is to meet its next sub goal in the Agenda 21 Plan for 75 % of food to be organic by 2012. Nursing homes are responsible for one-third of the entire consumption of food in the City's kitchens and the central kitchens have yet to switch to organic food on a larger scale. Therefore it is assessed that increased efforts in this area and more funding to the central kitchens is needed if the goals for 2012 and 2015 are to be achieved.

The most recent survey is from January and February 2010. Just over three-quarters of all kitchens have responded. And the figures for organic food in nursing homes cover almost 100

PERCENTAGE OF ORGANIC FOOD IN ALL MUNICIPAL INSTITUTIONS AND KITCHENS



REPORTED FIGURES FOR FOOD BY INSTITUTION TYPE IN 2009



% of consumption here. The survey is based on a qualified estimate of how much organic food each kitchen buys, calculated in kilos.

In private households, Copenhageners buy more than two-and-a-half times as much organic food as the average Dane. Measured in DKK, in 2009 a total of 18 % of the food consumed by Copenhageners was organic.

This is a small drop compared to 2008, when the proportion of organic food was 20 %. This drop can be explained, among other things, by a price war on organic food in 2009. As consumption is calculated in DKK, this does not necessarily mean that the amount of organic food consumed has decreased. Food consumption in the city also includes restaurants, cafés and private canteens for which there are still no official figures.

## GOALS FOR ORGANIC FOOD IN 2015



- There should be at least 20 % organic food in the city's food consumption
- The City to lead the way with at least 90 % organic food in its institutions

## READ MORE AT ...



[www.kbhmadhus.dk](http://www.kbhmadhus.dk)

About the City's efforts to switch to organic food (in Danish)

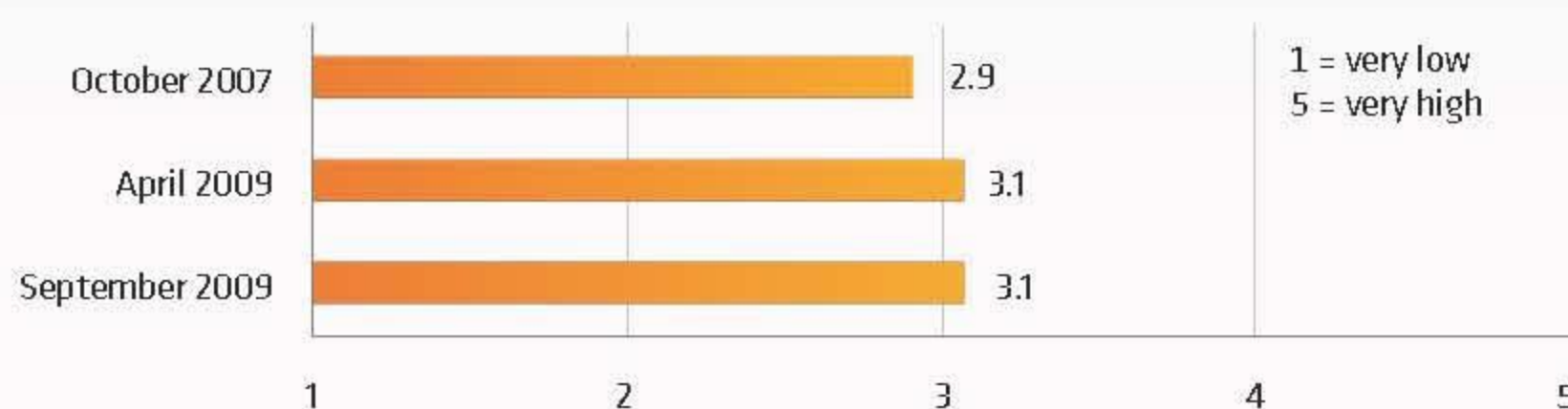
[www.kk.dk/miljoregnskab](http://www.kk.dk/miljoregnskab)

More about organic food in the City of Copenhagen (in Danish)





#### HOW SATISFIED COPENHAGENERS ARE WITH STREET CLEANING



## JOINING FORCES TO KEEP THE CITY CLEAN

Copenhagen is a big city with room for living. On the one hand lively street life leads to litter in the street. On the other hand a clean city adds to creating a feeling of security and well-being in the city.

There were numerous activities and events in Copenhagen in 2009. Yet citizens express that they feel that the city is slowly becoming cleaner. In the first survey from 2007, 1,000 citizens gave the city's street cleaning an average rating of 2.9 on a scale from 1 to 5. In 2009 this rating had increased to 3.1.

## GOALS FOR STREET CLEANING IN 2015



- Copenhagen should be Europe's cleanest capital and one of the cleanest capitals in the world
- Litter should be cleared from public streets within eight hours

## READ MORE AT ...



[www.kk.dk/miljoregnskab](http://www.kk.dk/miljoregnskab)  
More about street cleaning and how satisfied Copenhageners are with the City's efforts (in Danish)



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